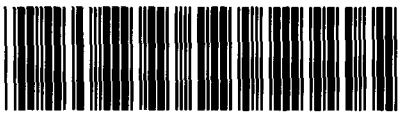

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PUC DOCKET NO. 48785

DIRECT TESTIMONY
OF BRENDA J. PERKINS, WITNESS FOR
ONCOR ELECTRIC DELIVERY COMPANY LLC AND AEP TEXAS INC.

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DIRECT TESTIMONY OF BRENDA J. PERKINS

I. POSITION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND ADDRESS.

A. My name is Brenda J. Perkins. I am president of BJ Perkins Corporation, an engineering consulting firm registered by the Texas Board of Professional Engineers. My business address is 115 West 7th Street, Fort Worth, Texas 76102.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL QUALIFICATIONS.

A. I graduated from the University of Texas at Arlington with a Bachelor of Science in Civil Engineering in 1981. I am a registered professional engineer in Texas (license #59883). I first worked as an engineering intern before graduation, then as a civil engineer after graduation, for Texas Power and Light Company ("TP&L") in their Transmission Engineering Department. My work assignments included providing engineering design and project management during the construction of transmission lines. In 1986, I resigned from TP&L to become a stay-at-home mother for ten years. During this ten-year period, I briefly worked part-time for Anchor Metals, Inc. and Meyer Industries analyzing and designing tubular steel poles and steel lattice towers for transmission line structures. In 1996, I formed my company, BJ Perkins Corporation, and have been an engineering consultant for Oncor Electric Delivery Company LLC ("Oncor") on numerous transmission line projects. Recently, I have provided project support for the routing, engineering and right-of-way ("ROW") acquisition of numerous Competitive Renewable Energy Zone ("CREZ") and non-CREZ transmission projects. My educational and professional qualifications are outlined in Exhibit BJP-1 attached hereto.

Q: HAVE YOU EVER SUBMITTED TESTIMONY BEFORE THE PUBLIC UTILITY COMMISSION OF TEXAS ("COMMISSION")?

A: Yes. I submitted written testimony in Docket Nos. 37408, 37529, 37530, 38324, 38517, 38677, 42087, 42583, 47368, 47808 and 48095. I testified

live in Docket Nos. 37530, 38517, 42087, 42583, 47368, 47808 and 48095.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my direct testimony is to address certain aspects of the Sand Lake – Solstice 345 kV transmission line project ("Proposed Transmission Line Project") on behalf of Oncor and AEP Texas Inc. ("AEP Texas") (AEP Texas and Oncor together, "Applicants"), including:

- the public participation meeting;
- routing considerations, including selection of the alternative route the Applicants believe best addresses the requirements of PURA and Commission Substantive Rules (later defined as the "Recommended Route" in my testimony for simplicity), and the other alternative routes presented;
- the adequacy of Applicants' geographically diverse filed routes; and
- notice provided pursuant to Commission rules.

The statements and opinions expressed in this testimony are based on: my previously described experience in the evaluation of transmission line routes; my independent review and evaluation of the data included in the *Environmental Assessment and Alternative Route Analysis for the Proposed Sand Lake – Solstice 345 kV Transmission Line Project in Pecos, Reeves and Ward Counties, Texas* ("EA"), prepared by Halff Associates, Inc. ("Halff") and included as Attachment No. 1 to the Application for a Certificate of Convenience and Necessity ("CCN") for a Proposed Transmission Line ("Application") filed in this docket by Applicants; discussions with Applicants' personnel; discussions with Halff personnel who participated in the development of the EA; my interactions at the public participation meeting; my observations of the project area based on reconnaissance investigations; and my understanding of Texas Utilities Code § 37.056 and 16 Texas Administrative Code ("TAC") §§

22.52 and 25.101 (attached hereto as Exhibits BJP-2, BJP-3 and BJP-4, respectively).

In addition to the testimony offered herein, I sponsor Applicants' responses to Question Nos. 17-19 and 21-29 in the Application, as well as Attachment Nos. 12-18 to the Application filed in this docket. The facts and statements set forth in those responses and attachments are true and correct. The Application and its attachments, as may be amended and/or supplemented, will be offered into evidence by Applicants at the hearing on the merits.

III. PUBLIC PARTICIPATION MEETING

Q. DID APPLICANTS HOLD A PUBLIC PARTICIPATION MEETING PRIOR TO FILING THE APPLICATION?

A. Yes. Once the preliminary alternative routes were identified by Halff, a public open house meeting prior to filing this CCN Application was hosted by Applicants and attended by Halff as well as personnel from TRC Solutions, Inc. ("TRC"), a property abstracting contractor for the Proposed Transmission Line Project. The meeting was held on August 15, 2018, from 4:00-7:00 p.m. at the Reeves County Civic Center in Pecos, Texas.

Q. WHAT WAS THE PURPOSE OF THE PUBLIC PARTICIPATION MEETING?

A. The purpose of the meeting was to solicit comments and input from residents, landowners, public officials, and other interested parties concerning the project, the preliminary alternative routes, and the overall transmission line routing process. Such meetings ensure that the values and concerns of the public were adequately identified and considered. Additionally, Applicants utilized the public meeting process to provide information about the project, including the need for the project and the certification process.

Q. HOW DID APPLICANTS PROVIDE NOTICE OF THE PUBLIC PARTICIPATION MEETING?

A. Notice was sent by first class mail to owners of property within 500 feet of the centerline of any preliminary alternative route presented for consideration at the public participation meeting. Approximately 775 notices were sent by first class mail to owners of property within 500 feet of the centerline of any preliminary alternative route presented for consideration at the public participation meeting. The public meeting notice was also sent to the Department of Defense Siting Clearinghouse. A representative copy of the notice mailed to property owners regarding the public participation meeting is located in Appendix B of the EA.

Q. WAS ANY OTHER FORM OF NOTICE USED TO ADVERTISE THE PUBLIC PARTICIPATION MEETING?

A. Yes. Notices for the public participation meeting were published on August 9, 2018, in the following newspapers with general circulation covering the three counties encompassing the study area for the Proposed Transmission Line Project: the *Pecos Enterprise* (Reeves County); the *Monahans News* (Ward County); and the *Fort Stockton Pioneer* (Pecos County). Each of these notices announced the location, time, and purpose of the meeting. A representative copy of the newspaper notices for the public participation meeting can be found in Appendix B of the EA.

Q. PLEASE EXPLAIN THE PUBLIC PARTICIPATION MEETING PROCESS.

A. The public participation meeting was conducted in an open house format. Interested parties arrived at a table where they were asked to sign an attendance register. They were then provided with a packet of information that contained frequently asked questions and the responses to those questions, a map showing the location of the preliminary alternative routes, and a questionnaire which they were encouraged to fill out.

Once attendees received the provided materials, they had the opportunity to visit a series of exhibits around the room staffed by representatives of Applicants, Halff, and TRC. The various stations

included information regarding the CCN process, a discussion of the need for the project, property ownership information, preliminary alternative routes and routing constraints, and environmental and engineering aspects.

The various exhibit areas were arranged in order to provide the attendees with a sequential approach to the information presented. The attendees were free to visit each of the exhibits in any order they wished and to spend as much time as they desired discussing each topic presented. An area was also set aside with tables and chairs to allow the attendees an opportunity to complete their questionnaires in close proximity to the exhibits. In this way, resources were readily available to provide further information on issues requiring additional discussion or clarification.

The information station format was utilized because it is Applicants' experience that the format allows attendees to learn about the project in a relaxed manner, to focus on issues of most interest to them, and to ask questions of Applicant representatives with knowledge of the various topics presented. Furthermore, this format facilitated more interaction with those attendees who might have been hesitant to participate in a speaker-audience format. This format has been successfully used by Applicants in many CCN proceedings.

Q. HAVE APPLICANTS COMPLIED WITH 16 TAC § 22.52(a)(4) CONCERNING PUBLIC MEETING REQUIREMENTS?

A. Yes.

IV. ROUTE SELECTION

Q. DO THE APPLICANTS RECOMMEND A ROUTE AND ALTERNATIVE ROUTES FOR THE PROPOSED TRANSMISSION LINE PROJECT?

A. Yes. As discussed in the response to Question No. 17 of the Application and my routing memorandum included as Attachment No. 12 to the Application and Exhibit BJP-5 hereto, the Applicants recommend a route

for the Proposed Transmission Line Project that best meets the requirements of the Texas Utilities Code and the Commission's Substantive Rules. Applicants also selected 28 other alternative routes, in addition to the Recommended Route, for inclusion in the Application. The 29 total alternative routes chosen for filing with the Application were selected from among the 408 preliminary alternative routes Halff developed, as further discussed in Mr. Russell J. Marusak's direct testimony on behalf of Applicants.

I grouped these alternative routes in five geographic corridors and then selected between four (4) and seven (7) alternative routes within each of the five corridors for filing with the Application. Additional information concerning the Recommended Route and alternative routes is contained in my routing memorandum attached hereto as Exhibit BJP-5.

Q. PLEASE DESCRIBE SOME OF THE KEY ATTRIBUTES OF THE 29 FILED ROUTES.

A. In addition to geographic differences, the more significant differences between the 29 alternative routes filed with the Application are route lengths, costs, number of habitable structures within 500 feet, and the utilization of existing compatible corridors. Route lengths for the total set of routes selected for filing range in length from approximately 44.5 miles to approximately 58.7 miles. The estimated transmission line costs for the filed routes range from approximately $98,220,000 to $126,903,000. The number of habitable structures within 500 feet of the various filed alternative routes ranges from 2 to 66. The percentage of each route that parallels existing compatible corridors, including existing transmission lines, public roads and highways, railroads, and apparent property boundaries, ranges from 17.3% to 48.7%.

Each of the 29 filed routes complies with Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code and 16 TAC § 25.101, including the Commission's policy of prudent avoidance, and each was developed in

compliance with 16 TAC § 22.52(a)(4). The filed routes provide geographic diversity and an adequate number of reasonably differentiated alternative routes from which to conduct a proper evaluation. In addition, each of the filed routes has been judged feasible from an engineering perspective based on known constraints, as further discussed in the direct testimony of Applicants' witness Mr. Wilson J. Peppard. All 29 filed alternative routes meet all of the statutory and regulatory requirements and are acceptable to Applicants.

V. RECOMMENDED ROUTE AND OTHER ALTERNATIVE ROUTES

Q. DO THE APPLICANTS RECOMMEND A ROUTE TO BE SELECTED?

A. Yes. Based on the criteria established in Section 37.056(c)(4)(D) of the Texas Utilities Code, 16 TAC § 25.101, including the policy of prudent avoidance, the Commission's CCN application form, the information provided to me by Mr. Peppard regarding cost estimates and engineering constraints, the information included in the EA, information received from interested landowners, and my personal reconnaissance of the study area, the Applicants recommend that the Commission select Route 320 for the Proposed Transmission Line Project as the route that best meets these statutory and regulatory guidelines ("Recommended Route"). As presented in the Application, the Applicants also recommend that the Commission consider the 28 additional alternative routes shown in Table 1 of my routing memorandum as viable alternatives to the Recommended Route. All of the routes included in the Application comply with the routing requirements of Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code and 16 TAC § 25.101.

Q. WHAT IS THE BASIS FOR SELECTION OF ROUTE 320 AS THE ROUTE THAT BEST MEETS THESE GUIDELINES?

A. Given the balance of the factors, the Applicants selected Route 320 as the route that best meets the applicable statutory and regulatory guidelines for the Proposed Transmission Line Project. Specifically, Route 320:

- is approximately 44.5 miles long, which is the shortest route filed with the Application and 14.2 miles shorter than the longest route filed with the Application;
- is estimated to cost $98,220,000, which is the least expensive route and is $28,683,000 less than the most expensive alternative route filed with the Application;
- has no habitable structures within the proposed ROW;
- has 38 habitable structures reported to be within 500 feet of its centerline, which is 28 less than the filed route with the most number of habitable structures within 500 feet;
    - Of the 38 habitable structures within 500 feet of Route 320, 32 of those habitable structures, located near Link B2 in clusters labeled as habitable structure numbers 2-12, 13-20, 22-33, and 34, are mobile living units that appear to be temporary construction housing, and none of which appear to have permanent foundations. As an example of these types of units, I have included as Exhibit BJP-6 a photograph that shows a portion of the mobile living units (habitable structure numbers 13-20, 22-33, and 34), in addition to a single family residence (labeled as habitable structure number 21). This photograph fairly and accurately depicts these habitable structures as of the date of the photograph. Exhibit BJP-6 also includes an aerial image overlay of these habitable structures in relation to Link B2 (part of the Recommended Route). Habitable structure numbers 2-12, which are also mobile living units, are located along Link B2 just north of those shown in Exhibit BJP-6, and these habitable structures are shown in Map Inset 2 of Figure 3-1A of the EA.
    - Of the 38 habitable structures within 500 feet of Route 320, two of those habitable structures, located near Link Z and labeled as

habitable structure numbers 67 and 68, are mobile office units that appear to be temporary support units for the construction site of the surrounding solar facility. I have included as Exhibit BJP-7 a photograph that fairly and accurately depicts these two mobile office units as of the date of the photograph as well as an aerial image overlay of these mobile office units in relation to Link Z (part of the Recommended Route).

- parallels existing compatible ROW and apparent property boundaries for approximately 27.2% of its length, which is more than the 17.3% of the route least frequently paralleling compatible corridors.

In addition, Route 320 has been judged to be feasible from an engineering perspective based on currently known conditions and without the benefit of on-the-ground and subsurface surveys, as further discussed in the direct testimony of Mr. Peppard.

Q. DOES THE RECOMMENDED ROUTE FOR THE PROPOSED TRANSMISSION LINE PROJECT COMPLY WITH SECTION 37.056(c)(4)(A)-(D) OF THE TEXAS UTILITIES CODE AND 16 TAC § 25.101(b)(3)(B)?

A. Yes. The Recommended Route does not significantly impact community values, recreational and park areas, historical and aesthetic values, or the environmental integrity of the area traversed by the Proposed Project. The Recommended Route limits exposures to electric and magnetic fields that can be avoided with reasonable investments of money and effort, and gives adequate consideration to the utilization or paralleling of existing compatible corridors. Specifically, the Recommended Route does not significantly impact communication facilities, airports, cropland irrigated by traveling irrigation systems, recreational or park areas, or known cultural resource sites. The Recommended Route has been routed to the extent reasonable to moderate the impact on the affected community and directly

affected landowners by utilizing or paralleling existing compatible ROW and apparent property boundaries for approximately 27.2% of its length.

Q. WHAT IS THE BASIS FOR RECOMMENDING THE OTHER 28 ALTERNATIVE ROUTES FILED WITH THE APPLICATION?

A. Each of these alternative routes complies with the provisions of Section 37.056(c) of the Texas Utilities Code and 16 TAC § 25.101. In addition, they provide geographic diversity and an adequate number of alternative routes to conduct a proper evaluation.

Q. ARE YOU FAMILIAR WITH THE COMMISSION'S "POLICY OF PRUDENT AVOIDANCE"?

A. Yes.

Q. BRIEFLY DESCRIBE YOUR UNDERSTANDING OF THE COMMISSION'S POLICY OF PRUDENT AVOIDANCE.

A. 16 TAC § 25.101 defines prudent avoidance as "the limiting of exposures to electric and magnetic fields that can be avoided with reasonable investments of money and effort." My understanding of the Commission's policy of prudent avoidance is that the process of routing a proposed transmission line should include consideration of routing options that will reasonably avoid population centers and other locations where people gather. This does not mean that a proposed transmission line must avoid habitable structures at all costs, but that reasonable alternatives should be considered.

Q. DO THE ALTERNATIVE ROUTES INCLUDED IN THE APPLICATION, INCLUDING THE RECOMMENDED ROUTE, ADHERE TO THE COMMISSION'S POLICY OF PRUDENT AVOIDANCE?

A. Yes, all of the alternative routes proposed comply with the Commission's policy of prudent avoidance.

Q. PLEASE EXPLAIN THE CLUSTER OF HABITABLE STRUCTURE NUMBERS 51-61 LOCATED NEAR LINK C1.

A. Similar to the mobile living units near Link B2 and the mobile office units near Link Z discussed above, there exists a cluster of apparent mobile office units located at a pad site near Link C1. These eleven habitable structures appear to be temporary in nature and without permanent foundations. I have included as Exhibit BJP-8 a photograph that fairly and accurately depicts these mobile living units as of the date of the photograph as well as an aerial image overlay of these mobile living units in relation to Link C1.

VI. ADEQUACY OF ROUTES

Q. DOES THE APPLICATION CONTAIN AN ADEQUATE NUMBER OF ALTERNATIVE ROUTES TO CONDUCT A PROPER EVALUATION?

A. Yes. Visual inspection of Figures 3-1A and 3-1B in the EA shows the nature of the project area. Within this area, the Application includes 29 reasonably differentiated, geographically diverse alternative routes that are consistent with the provisions of the Texas Utilities Code and the Commission's Substantive Rules. Based on my experience, my visual inspection of the area on several reconnaissance visits, and the EA, the Application contains an adequate number of alternative routes to conduct a proper evaluation. Thus, the adequacy of the routing options provided in the Application is demonstrated both by the number of options presented to the Commission and the geographic diversity present among these options.

Q. WERE ALL LINKS PROPOSED BY HALFF UTILIZED IN YOUR SELECTION OF ALTERNATIVE ROUTES?

A. Yes.

VII. NOTICE

Q. WILL APPLICANTS PROVIDE NOTICE OF THE FILING OF THIS APPLICATION AS REQUIRED BY THE COMMISSION'S PROCEDURAL RULES?

A. Yes. Public notice will be published in: the *Pecos Enterprise* (Reeves County); the *Monahans News* (Ward County); and the *Fort Stockton Pioneer* (Pecos County). These newspapers collectively have general circulation within the three counties involved in the Proposed Transmission Line Project. Publishers' affidavits attesting to the publication of these notices will be attached to an affidavit from Applicants attesting to the provision of newspaper notice.

On the date the Application is filed with the Commission, Applicants will also provide notice in the following ways:

- Either hand-deliver or mail written notice of the Application (in the form required by the Commission) to each landowner of record that would be directly affected (as defined by 16 TAC § 22.52(a)(3)) by the Commission's approval of the Application on one of the routes included in the Application. Landowners of record were determined by review of current county tax rolls;
- Mail written notice of the Application to the county judges and commissioners of Pecos, Reeves, and Ward Counties, the only counties where any portion of the requested facilities will be located;
- Mail written notice of the Application to the cities of Barstow and Pecos, the sole municipalities within five (5) miles of the requested facilities;
- Mail written notice of the Application to Texas-New Mexico Power Company and Rio Grande Electric Cooperative, the neighboring utilities providing electric service within a five (5) mile radius of the proposed alternative routes;
- Mail written notice of the Application to certain pipeline owners and operators. A representative copy of the notice is included as Attachment No. 17 to the Application;

- E-mail notice of the Application to the email address for the Department of Defense Clearinghouse as required by the Commission's CCN Application form;
- Mail a copy of the Application and its attachments to the Office of Public Utility Counsel; and
- Mail a copy of the EA to the Texas Parks and Wildlife Department.

Q. WILL APPLICANTS' PROVISION OF NOTICE FOR THE PROPOSED TRANSMISSION LINE PROJECT COMPLY WITH 16 TAC § 22.52?

A. Yes. Applicants will file affidavits in the docket attesting to the provision of notice.

VIII. CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

AFFIDAVIT

STATE OF TEXAS §
§
COUNTY OF TARRANT §

BEFORE ME, the undersigned authority, on this day personally appeared Brenda J. Perkins who, having been placed under oath by me, did depose as follows:

My name is Brenda J. Perkins. I am of legal age and a resident of the State of Texas. The foregoing testimony and exhibit offered by me are true and correct, and the opinions stated therein are, to the best of my knowledge and belief, accurate, true and correct.

Brenda J. Perkins

SUBSCRIBED AND SWORN TO BEFORE ME on this 1st day of November, 2018.

Notary Public, State of Texas

My Commission Expires:
3-11-2019

LARA S DALE
Notary Public, State of Texas
Comm. Expires 03-11-2019
Notary ID 12835480-4

BRENDA J. PERKINS, P.E.

President, BJ Perkins Corporation
Managing Partner, Brenda Perkins and Associates, LLP

EDUCATION:
University of Texas at Arlington
B.S., Civil Engineering, 1981

PROFESSIONAL REGISTRATION:
Licensed Professional Engineer, Texas

PROFESSIONAL AFFILIATIONS:
Transmission and Substation Design and Operation Symposium Attendee

CIVIC ACTIVITIES:
1996 – 2008: held various PTA officer positions in Arlington ISD including President at 2 schools

2014 – Present: held various HOA officer positions

Brenda Perkins has over 25 years of experience in the high voltage power line industry. The following is a brief chronological outline of her experience:

Texas Power & Light Company, Dallas, Texas
Civil Engineer (1981-1986)

- Provided engineering design, project scheduling, and engineering support during project construction of transmission and distribution lines.

Anchor Metals, Inc., Hurst, Texas
Design Engineer (1988,1989)

- Analyzed and designed tubular steel pole structures for utility company bids.

Meyer Industries/Anchor Metals, Bedford, Texas
Design Engineer (1989, 1990)

- Analyzed and designed steel lattice tower structures for utility company bids.

Brenda Perkins and Associates, LLP, Arlington, Texas
Managing Partner (1996 – Present)

- 1996-1999: Managed and was responsible for providing crews to perform maintenance services and repairs on transmission line facilities and substation equipment.
- 1999-2003: Managed turnkey transmission line relocations and line re-conductoring projects.
- 2001-Present: Manage personnel responsible for field observation and reporting of project site controls specifically related to the Storm Water Pollution Prevention Plan (SWPPP) requirements on transmission line and substation projects.

BJ Perkins Corporation, Arlington, Texas
President (1996 – Present)

- 2004 – May 2009: Provide engineering design of transmission line projects and engineering support during project construction.
- May 2009 – January 2011: Provide engineering evaluation, cost projections and engineering representation for proposed transmission line routes on behalf of Oncor Electric Delivery for their Certificate of Convenience and Necessity (CCN) application to the Public Utility Commission of Texas
- February 2011 – April 2015: Provide engineering expert testimony for transmission line right-of-way acquisition in eminent domain court proceedings
- January 2013 – Present: Provide project management and expert testimony on behalf of Oncor Electric Delivery for transmission line routing studies

Sec. 37.056. GRANT OR DENIAL OF CERTIFICATE. (a) The commission may approve an application and grant a certificate only if the commission finds that the certificate is necessary for the service, accommodation, convenience, or safety of the public.

(b) The commission may:

(1) grant the certificate as requested;

(2) grant the certificate for the construction of a portion of the requested system, facility, or extension or the partial exercise of the requested right or privilege; or

(3) refuse to grant the certificate.

(c) The commission shall grant each certificate on a nondiscriminatory basis after considering:

(1) the adequacy of existing service;

(2) the need for additional service;

(3) the effect of granting the certificate on the recipient of the certificate and any electric utility serving the proximate area; and

(4) other factors, such as:

(A) community values;

(B) recreational and park areas;

(C) historical and aesthetic values;

(D) environmental integrity;

(E) the probable improvement of service or lowering of cost to consumers in the area if the certificate is granted; and

(F) to the extent applicable, the effect of granting the certificate on the ability of this state to meet the goal established by Section 39.904(a) of this title.

(d) The commission by rule shall establish criteria, in addition to the criteria described by Subsection (c), for granting a certificate for a transmission project that serves the ERCOT power region, that is not necessary to meet state or federal reliability standards, and that does not serve a competitive renewable energy zone. The criteria must include a comparison of the estimated cost of the transmission project and the estimated cost savings that may result from the transmission project. The commission shall include with its decision on an application for a certificate to which this subsection applies findings on the criteria.

Acts 1997, 75th Leg., ch. 166, Sec. 1, eff. Sept. 1, 1997. Amended by Acts 2003, 78th Leg., ch. 295, Sec. 2, eff. June 18, 2003.

Amended by:

Acts 2011, 82nd Leg., R.S., Ch. 949 (H.B. 971), Sec. 2(a), eff. June 17, 2011.

Subchapter D. NOTICE.

§22.52. Notice in Licensing Proceedings.

(a) **Notice in electric licensing proceedings.** In all electric licensing proceedings except minor boundary changes, the applicant shall give notice in the following ways:

(1) Applicant shall publish notice once of the applicant's intent to secure a certificate of convenience and necessity in a newspaper having general circulation in the county or counties where a certificate of convenience and necessity is being requested, no later than the week after the application is filed with the commission. This notice shall identify the commission's docket number and the style assigned to the case by Central Records. In electric transmission line cases, the applicant shall obtain the docket number and style no earlier than 25 days prior to making the application by filing a preliminary pleading requesting a docket assignment. The notice shall identify in general terms the type of facility if applicable, and the estimated expense associated with the project. The notice shall describe all routes without designating a preferred route or otherwise suggesting that a particular route is more or less likely to be selected than one of the other routes.

(A) The notice shall include all the information required by the standard format established by the commission for published notice in electric licensing proceedings. The notice shall state the date established for the deadline for intervention in the proceeding (date 45 days after the date the formal application was filed with the commission; or date 30 days after the date the formal application was filed with the commission for an application for certificate of convenience and necessity filed under PURA §39.203(e)) and that a letter requesting intervention should be received by the commission by that date.

(B) The notice shall describe in clear, precise language the geographic area for which the certificate is being requested and the location of all alternative routes of the proposed facility. This description shall refer to area landmarks, including but not limited to geographic landmarks, municipal and county boundary lines, streets, roads, highways, railroad tracks, and any other readily identifiable points of reference, unless no such references exist for the geographic area. In addition, the notice shall include a map that identifies all of the alternative locations of the proposed routes and all major roads, transmission lines, and other features of significance to the areas that are used in the utility's written notice description.

(C) The notice shall state a location where a detailed routing map may be reviewed. The map shall clearly and conspicuously illustrate the location of the area for which the certificate is being requested including all the alternative locations of the proposed routes, and shall reflect area landmarks, including but not limited to geographic landmarks, municipal and county boundary lines, streets, roads, highways, railroad tracks, and any other readily identifiable points of reference, unless no such references exist for the geographic area.

(D) Proof of publication of notice shall be in the form of a publisher's affidavit which shall specify the newspaper(s) in which the notice was published, the county or counties in which the newspaper(s) is or are of general circulation, the dates upon which the notice was published, and a copy of the notice as published. Proof of publication shall be submitted to the commission as soon as available.

(E) The applicant shall provide a copy of each environmental impact study and/or assessment for the project to the Texas Parks and Wildlife Department (TPWD) for its review within seven days of filing the application. Proof of submission of the information to TPWD shall be provided in the form of an affidavit to the commission, which shall specify the date the information was mailed or otherwise provided to TPWD, and shall provide a copy of the cover letter or other documentation that confirms that the information was provided to TPWD.

(2) Applicant shall, upon filing an application, also mail notice of its application to municipalities within five miles of the requested territory or facility, neighboring utilities providing the same utility service within five miles of the requested territory or facility, the county government(s)

Subchapter D. NOTICE.

of all counties in which any portion of the proposed facility or requested territory is located, and the Department of Defense Siting Clearinghouse. In addition, the applicant shall, upon filing the application, serve the notice on the Office of Public Utility Counsel using a method specified in §22.74(b) of this title (relating to Service of Pleadings and Documents). The notice shall contain the information as set out in paragraph (1) of this subsection and a map as described in paragraph (1)(C) of this subsection. An affidavit attesting to the provision of notice to municipalities, utilities, counties, the Department of Defense Siting Clearinghouse, and the Office of Public Utility Counsel shall specify the dates of the provision of notice and the identity of the individual municipalities, utilities, and counties to which such notice was provided. Before final approval of any modification in the applicant's proposed route(s), applicant shall provide notice as required under this paragraph to municipalities, utilities, and counties affected by the modification which have not previously received notice. The notice of modification shall state such entities will have 20 days to intervene.

(3) Applicant shall, on the date it files an application, mail notice of its application to the owners of land, as stated on the current county tax roll(s), who would be directly affected by the requested certificate. For purposes of this paragraph, land is directly affected if an easement or other property interest would be obtained over all or any portion of it, or if it contains a habitable structure that would be within 300 feet of the centerline of a transmission project of 230kV or less, or within 500 feet of the centerline of a transmission project greater than 230kV.

(A) The notice must contain all information required in paragraph (1) of this subsection and shall include all the information required by the standard notice letter to landowners prescribed by the commission. The commission's docket number pertaining to the application must be stated in all notices. The notice must also include a copy of the "Landowners and Transmission Line Cases at the PUC" brochure prescribed by the commission.

(B) The notice must include a map as described in paragraph (1)(C) of this subsection.

(C) Before final approval of any modification in the applicant's proposed route(s), applicant shall provide notice as required under subparagraphs (A) and (B) of this paragraph to all directly affected landowners who have not already received such notice.

(D) Proof of notice may be established by an affidavit affirming that the applicant sent notice by first-class mail to each of the persons listed as an owner of directly affected land on the current county tax roll(s). The proof of notice shall include a list of all landowners to whom notice was sent and a statement of whether any formal contact related to the proceeding between the utility and the landowner other than the notice has occurred. This proof of notice shall be filed with the commission no later than 20 days after the filing of the application.

(E) Upon the filing of proof of notice as described in subparagraph (D) of this paragraph, the lack of actual notice to any individual landowner will not in and of itself support a finding that the requirements of this paragraph have not been satisfied. If, however, the utility finds that an owner of directly affected land has not received notice, it shall immediately advise the commission by written pleading and shall provide notice to such landowner(s) by priority mail, with delivery confirmation, in the same form described in subparagraphs (A) and (B) of this paragraph, except that the notice shall state that the person has fifteen days from the date of delivery to intervene. The utility shall immediately file a supplemental affidavit of notice with the commission.

(4) The utility shall hold at least one public meeting prior to the filing of its licensing application if 25 or more persons would be entitled to receive direct mail notice of the application. Direct mail notice of the public meeting shall be sent by first-class mail to each of the persons listed on the current county tax rolls as an owner of land within 300 feet of the centerline of a transmission project of 230kV or less, or within 500 feet of the centerline of a transmission project greater than 230kV. The utility shall also provide written notice to the Department of Defense Siting Clearinghouse of the public meeting. In the notice for the public meeting, at the public meeting, and in other communications with a potentially affected person, the utility

Subchapter D. NOTICE.

shall not describe routes as preferred routes or otherwise suggest that a particular route is more or less likely to be selected than one of the other routes. In the event that no public meeting is held, the utility shall provide written notice to the Department of Defense Siting Clearinghouse of the planned filing of an application prior to completion of the routing study.

(5) Failure to provide notice in accordance with this section shall be cause for day-for-day extension of deadlines for intervention and for commission action on the application.

(6) Upon entry of a final, appealable order by the commission approving an application, the utility shall provide notice to all owners of land who previously received direct notice. Proof of notice under this subsection shall be provided to the commission's staff.

(A) If the owner's land is directly affected by the approved route, the notice shall consist of a copy of the final order.

(B) If the owner's land is not directly affected by the approved route, the notice shall consist of a brief statement that the land is no longer the subject of a pending proceeding and will not be directly affected by the facility.

(7) All notices of an applicant's intent to secure a certificate of convenience and necessity whether provided by publication or direct mail shall include the following language: "All routes and route segments included in this notice are available for selection and approval by the Public Utility Commission of Texas."

(b) **Notice in telephone licensing proceedings.** In all telephone licensing proceedings, except minor boundary changes, applications for a certificate of operating authority, or applications for a service provider certificate of operating authority, the applicant shall give notice in the following ways:

(1) Applicants shall publish in a newspaper having general circulation in the county or counties where a certificate of convenience and necessity is being requested, once each week for two consecutive weeks, beginning the week after the application is filed, notice of the applicant's intent to secure a certificate of convenience and necessity. This notice shall identify in general terms the types of facilities, if applicable, the area for which the certificate is being requested, and the estimated expense associated with the project. Whenever possible, the notice should state the established intervention deadline. The notice shall also include the following statement: "Persons with questions about this project should contact (name of utility contact) at (utility contact telephone number). Persons who wish to intervene in the proceeding or comment upon action sought, should contact the Public Utility Commission, P.O. Box 13326, Austin, Texas 78711-3326, or call the Public Utility Commission at (512) 936-7120 or (888) 782-8477. Hearing- and speech-impaired individuals with text telephones (TTY) may contact the commission at (512) 936-7136. The deadline for intervention in the proceeding is (date 70 days after the date the application was filed with the commission) and you must send a letter requesting intervention to the commission which is received by that date." Proof of publication of notice shall be in the form of a publisher's affidavit, which shall specify the newspaper or newspapers in which the notice was published; the county or counties in which the newspaper or newspapers is or are of general circulation; the dates upon which the notice was published and a copy of the notice as published. Proof of publication shall be submitted to the commission as soon as available.

(2) Applicant shall also mail notice of its application, which shall contain the information as set out in paragraph (1) of this subsection, to cities and to neighboring utilities providing the same service within five miles of the requested territory or facility. Applicant shall also provide notice to the county government of all counties in which any portion of the proposed facility or territory is located. The notice provided to county governments shall be identical to that provided to cities and to neighboring utilities. An affidavit attesting to the provision of notice to counties shall specify the dates of the provision of notice and the identity of the individual counties to which such notice was provided.

(3) Failure to provide notice in accordance with this section shall be cause for day-for-day extension of deadlines for intervention.

CHAPTER 25. SUBSTANTIVE RULES APPLICABLE TO ELECTRIC SERVICE PROVIDERS.

Subchapter E. CERTIFICATION, LICENSING AND REGISTRATION.

§25.101. Certification Criteria.

(a) **Definitions.** The following words and terms, when used in this section, shall have the following meanings unless the context clearly indicates otherwise:

(1) **Construction and/or extension** -- Shall not include the purchase or condemnation of real property for use as facility sites or right-of-way. Acquisition of right-of-way shall not be deemed to entitle an electric utility to the grant of a certificate of convenience and necessity without showing that the construction and/or extension is necessary for the service, accommodation, convenience, or safety of the public.

(2) **Generating unit** -- Any electric generating facility. This section does not apply to any generating unit that is less than ten megawatts and is built for experimental purposes only.

(3) **Habitable structures** -- Structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis. Habitable structures include, but are not limited to: single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, and schools.

(4) **Municipal Power Agency (MPA)** -- Agency or group created under Texas Utilities Code, Chapter 163 – Joint Powers Agencies.

(5) **Municipal Public Entity (MPE)** -- A municipally owned utility (MOU) or a municipal power agency.

(6) **Prudent avoidance** -- The limiting of exposures to electric and magnetic fields that can be avoided with reasonable investments of money and effort.

(7) **Tie line** -- A facility to be interconnected to the Electric Reliability Council of Texas (ERCOT) transmission grid by a person, including an electric utility or MPE, that would enable additional power to be imported into or exported out of the ERCOT power grid.

(b) **Certificates of convenience and necessity for new service areas and facilities.** Except for certificates granted under subsection (e) of this section, the commission may grant an application and issue a certificate only if it finds that the certificate is necessary for the service, accommodation, convenience, or safety of the public, and complies with the statutory requirements in the Public Utility Regulatory Act (PURA) §37.056. The commission may issue a certificate as applied for, or refuse to issue it, or issue it for the construction of a portion of the contemplated system or facility or extension thereof, or for the partial exercise only of the right or privilege. The commission shall render a decision approving or denying an application for a certificate within one year of the date of filing of a complete application for such a certificate, unless good cause is shown for exceeding that period. A certificate, or certificate amendment, is required for the following:

(1) **Change in service area.** Any certificate granted under this section shall not be construed to vest exclusive service or property rights in and to the area certificated.

(A) Uncontested applications: An application for a certificate under this paragraph shall be approved administratively within 80 days from the date of filing a complete application if:

(i) no motion to intervene has been filed or the application is uncontested;

(ii) all owners of land that is affected by the change in service area and all customers in the service area being changed have been given direct mail notice of the application; and

(iii) commission staff has determined that the application is complete and meets all applicable statutory criteria and filing requirements, including, but not limited to, the provision of proper notice of the application.

(B) Minor boundary changes or service area exceptions: Applications for minor boundary changes or service area exceptions shall be approved administratively within 45 days of the filing of the application provided that:

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(i) every utility whose certificated service area is affected agrees to the change;
(ii) all customers within the affected area have given prior consent; and
(iii) commission staff has determined that the application is complete and meets all applicable statutory criteria and filing requirements, including, but not limited to, the provision of proper notice of the application.

(2) **Generation facility.**

(A) In a proceeding involving the purchase of an existing electric generating facility by an electric utility that operates solely outside of ERCOT, the commission shall issue a final order on a certificate for the facility not later than the 181st day after the date a request for the certificate is filed with the commission under PURA §37.058(b).

(B) In a proceeding involving a newly constructed generating facility by an electric utility that operates solely outside of ERCOT, the commission shall issue a final order on a certificate for the facility not later than the 366th day after the date a request for the certificate is filed with the commission under PURA §37.058(b).

(3) **Electric transmission line.** All new electric transmission lines shall be reported to the commission in accordance with §25.83 of this title (relating to Transmission Construction Reports). This reporting requirement is also applicable to new electric transmission lines to be constructed by an MPE seeking to directly or indirectly construct, install, or extend a transmission facility outside of its applicable boundaries. For an MOU, the applicable boundaries are the municipal boundaries of the municipality that owns the MOU. For an MPA, the applicable boundaries are the municipal boundaries of the public entities participating in the MPA.

(A) Need:

(i) Except as stated below, the following must be met for a transmission line in the ERCOT power region. The applicant must present an economic cost-benefit study that includes an analysis that shows that the levelized ERCOT-wide annual production cost savings attributable to the proposed project are equal to or greater than the first-year annual revenue requirement of the proposed project of which the transmission line is a part. Indirect costs and benefits to the transmission system may be included in the cost-benefit study. The commission shall give great weight to such a study if it is conducted by the ERCOT independent system operator. This requirement also does not apply to an application for a transmission line that is necessary to meet state or federal reliability standards, including: a transmission line needed to interconnect a transmission service customer or end-use customer; or needed due to the requirements of any federal, state, county, or municipal government body or agency for purposes including, but not limited to, highway transportation, airport construction, public safety, or air or water quality.

(ii) For a transmission line not addressed by clause (i) of this subparagraph, the commission shall consider among other factors, the needs of the interconnected transmission systems to support a reliable and adequate network and to facilitate robust wholesale competition. The commission shall give great weight to:

(I) the recommendation of an organization that meets the requirement of PURA §39.151; and/or

(II) written documentation that the transmission line is needed to interconnect a transmission service customer or an end-use customer.

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(B) **Routing:** An application for a new transmission line shall address the criteria in PURA §37.056(c) and considering those criteria, engineering constraints, and costs, the line shall be routed to the extent reasonable to moderate the impact on the affected community and landowners unless grid reliability and security dictate otherwise. The following factors shall be considered in the selection of the utility's alternative routes unless a route is agreed to by the utility, the landowners whose property is crossed by the proposed line, and owners of land that contains a habitable structure within 300 feet of the centerline of a transmission project of 230 kV or less, or within 500 feet of the centerline of a transmission project greater than 230 kV, and otherwise conforms to the criteria in PURA §37.056(c):

(i) whether the routes parallel or utilize existing compatible rights-of-way for electric facilities, including the use of vacant positions on existing multiple-circuit transmission lines;

(ii) whether the routes parallel or utilize other existing compatible rights-of-way, including roads, highways, railroads, or telephone utility rights-of-way;

(iii) whether the routes parallel property lines or other natural or cultural features; and

(iv) whether the routes conform with the policy of prudent avoidance.

(C) Uncontested transmission lines: An application for a certificate for a transmission line shall be approved administratively within 80 days from the date of filing a complete application if:

(i) no motion to intervene has been filed or the application is uncontested; and

(ii) commission staff has determined that the application is complete and meets all applicable statutory criteria and filing requirements, including, but not limited to, the provision of proper notice of the application.

(D) Projects deemed critical to reliability. Applications for transmission lines which have been formally designated by a PURA §39.151 organization as critical to the reliability of the system shall be considered by the commission on an expedited basis. The commission shall render a decision approving or denying an application for a certificate under this subparagraph within 180 days of the date of filing a complete application for such a certificate unless good cause is shown for extending that period.

(4) **Tie line**. An application for a tie line must include a study of the tie line by the ERCOT independent system operator. The study shall include, at a minimum, an ERCOT-approved reliability assessment of the proposed tie line. If an independent system operator intends to conduct a study to evaluate a proposed tie line or intends to provide confidential information to another entity to permit the study of a proposed tie line, the independent system operator shall file notice with the commission at least 45 days prior to the commencement of such a study or the provision of such information. This paragraph does not apply to a facility that is in service on December 31, 2014.

(c) **Projects or activities not requiring a certificate.** A certificate, or certificate amendment, is not required for the following:

(1) A contiguous extension of those facilities described in PURA §37.052;

(2) A new electric high voltage switching station, or substation;

(3) The repair or reconstruction of a transmission facility due to emergencies. The repair or reconstruction of a transmission facility due to emergencies shall proceed without delay or prior approval of the commission and shall be reported to the commission in accordance with §25.83 of this title;

(4) The construction or upgrading of distribution facilities within the electric utility's service area;

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(5) Routine activities associated with transmission facilities that are conducted by transmission service providers. Nothing contained in the following subparagraphs should be construed as a limitation of the commission's authority as set forth in PURA. Any activity described in the following subparagraphs shall be reported to the commission in accordance with §25.83 of this title. The commission may require additional facts or call a public hearing thereon to determine whether a certificate of convenience and necessity is required. Routine activities are defined as follows:

(A) The modification or extension of an existing transmission line solely to provide service to a substation or metering point provided that:

(i) an extension to a substation or metering point does not exceed one mile; and

(ii) all landowners whose property is crossed by the transmission facilities have given prior written consent.

(B) The rebuilding, replacement, or respacing of structures along an existing route of the transmission line; upgrading to a higher voltage not greater than 230 kV; bundling of conductors or reconductoring of an existing transmission facility, provided that:

(i) no additional right-of-way is required; or

(ii) if additional right-of-way is required, all landowners of property crossed by the electric facilities have given prior written consent.

(C) The installation, on an existing transmission line, of an additional circuit not previously certificated, provided that:

(i) the additional circuit is not greater than 230 kV; and

(ii) all landowners whose property is crossed by the transmission facilities have given prior written consent.

(D) The relocation of all or part of an existing transmission facility due to a request for relocation, provided that:

(i) the relocation is to be done at the expense of the requesting party; and

(ii) the relocation is solely on a right-of-way provided by the requesting party.

(E) The relocation or alteration of all or part of an existing transmission facility to avoid or eliminate existing or impending encroachments, provided that all landowners of property crossed by the electric facilities have given prior written consent.

(F) The relocation, alteration, or reconstruction of a transmission facility due to the requirements of any federal, state, county, or municipal governmental body or agency for purposes including, but not limited to, highway transportation, airport construction, public safety, or air and water quality, provided that:

(i) all landowners of property crossed by the electric facilities have given prior written consent; and

(ii) the relocation, alteration, or reconstruction is responsive to the governmental request.

(6) Upgrades to an existing transmission line by an MPE that do not require any additional land, right-of-way, easement, or other property not owned by the MOU;

(7) The construction, installation, or extension of a transmission facility by an MPE that is entirely located not more than 10 miles outside of an MOU's certificated service area that occurs before September 1, 2021; or

(8) A transmission facility by an MOU placed in service after September 1, 2015, that is developed to interconnect a new natural gas generation facility to the ERCOT transmission grid and for which, on or before January 1, 2015, an MOU was contractually obligated to purchase at least 190 megawatts of capacity.

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(d) **Standards of construction and operation.** In determining standard practice, the commission shall be guided by the provisions of the American National Standards Institute, Incorporated, the National Electrical Safety Code, and such other codes and standards that are generally accepted by the industry, except as modified by this commission or by municipal regulations within their jurisdiction. Each electric utility shall construct, install, operate, and maintain its plant, structures, equipment, and lines in accordance with these standards, and in such manner to best accommodate the public, and to prevent interference with service furnished by other public utilities insofar as practical.

(1) The standards of construction shall apply to, but are not limited to, the construction of any new electric transmission facilities, rebuilding, upgrading, or relocation of existing electric transmission facilities.

(2) For electric transmission line construction requiring the acquisition of new rights-of-way, electric utilities must include in the easement agreement, at a minimum, a provision prohibiting the new construction of any above-ground structures within the right-of-way. New construction of structures shall not include necessary repairs to existing structures, farm or livestock facilities, storage barns, hunting structures, small personal storage sheds, or similar structures. Utilities may negotiate appropriate exceptions in instances where the electric utility is subject to a restrictive agreement being granted by a governmental agency or within the constraints of an industrial site. Any exception to this paragraph must meet all applicable requirements of the National Electrical Safety Code.

(3) Measures shall be applied when appropriate to mitigate the adverse impacts of the construction of any new electric transmission facilities, and the rebuilding, upgrading, or relocation of existing electric transmission facilities. Mitigation measures shall be adapted to the specifics of each project and may include such requirements as:

(A) selective clearing of the right-of-way to minimize the amount of flora and fauna disturbed;

(B) implementation of erosion control measures;

(C) reclamation of construction sites with native species of grasses, forbs, and shrubs; and

(D) returning site to its original contours and grades.

(e) **Certificates of convenience and necessity for existing service areas and facilities.** For purposes of granting these certificates for those facilities and areas in which an electric utility was providing service on September 1, 1975, or was actively engaged in the construction, installation, extension, improvement of, or addition to any facility actually used or to be used in providing electric utility service on September 1, 1975, unless found by the commission to be otherwise, the following provisions shall prevail for certification purposes:

(1) The electrical generation facilities and service area boundary of an electric utility having such facilities in place or being actively engaged in the construction, installation, extension, improvement of, or addition to such facilities or the electric utility's system as of September 1, 1975, shall be limited, unless otherwise provided, to the facilities and real property on which the facilities were actually located, used, or dedicated as of September 1, 1975.

(2) The transmission facilities and service area boundary of an electric utility having such facilities in place or being actively engaged in the construction, installation, extension, improvement of, or addition to such facilities or the electric utility's system as of September 1, 1975, shall be, unless otherwise provided, the facilities and a corridor extending 100 feet on either side of said transmission facilities in place, used or dedicated as of September 1, 1975.

(3) The facilities and service area boundary for the following types of electric utilities providing distribution or collection service to any area, or actively engaged in the construction, installation, extension, improvement of, or addition to such facilities or the electric utility's system as of September 1, 1975, shall be limited, unless otherwise found by the commission, to the facilities and the area which lie within 200 feet of any point along a distribution line, which is specifically deemed to include service drop lines, for electrical utilities.

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(f) **Transferability of certificates.** Any certificate granted under this section is not transferable without approval of the commission and shall continue in force until further order of the commission.

(g) **Certification forms.** All applications for certificates of convenience and necessity shall be filed on commission-prescribed forms so that the granting of certificates, both contested and uncontested, may be expedited. Forms may be obtained from Central Records.

(h) **Commission authority**. Nothing in this section is intended to limit the commission's authority to recommend or direct the construction of transmission under PURA §§35.005, 36.008, or 39.203(e).

Office Memorandum

Date: October 30, 2018

To: File

From: Brenda J. Perkins

Subject: Alternative Routes Evaluation: Sand Lake – Solstice 345 kV Transmission Line Project

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This memorandum discusses the evaluation of routing alternatives for Oncor Electric Delivery Company LLC's ("Oncor") and AEP Texas Inc.'s ("AEP Texas") proposed Salt Lake – Solstice 345 kV Transmission Line Project ("Proposed Transmission Line Project"). In addition to the recommendation for a route that best meets the requirements of the Texas Utilities Code and the Substantive Rules of the Public Utility Commission of Texas ("Commission"), alternative routes were also selected to be filed with this joint CCN Application of Oncor and AEP Texas. The goal of this process is to provide the Commission with an adequate number of alternative routes to conduct a proper evaluation. These alternative routes provide good geographic diversity while complying with Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code, 16 Tex. Admin. Code § 22.52(a)(4) ("TAC"), and 16 TAC § 25.101(b)(3)(B), including the Commission's policy of prudent avoidance. The selections are based on Oncor and AEP Texas' reconnaissance and observations of the project area, both companies independent review of the data included in the *Environmental Assessment and Alternative Route Analysis for Oncor Electric Delivery Company LLC's and AEP Texas Inc.'s Proposed Salt Lake – Solstice 345 kV Transmission Line Project in Pecos, Reeves and Ward Counties, Texas* ("Environmental Assessment and Routing Study") prepared by Halff Associates, Inc. ("Halff"); discussions with Halff personnel; discussions with Oncor and AEP Texas personnel; both companies' involvement in the public participation meeting process; review of correspondence related to the Proposed Transmission Line Project; other input that Oncor and AEP Texas received from interested parties; and other information. The selections incorporate consideration of engineering feasibility, the estimated cost of alternative routes, construction limitations, and other information.

Halff documented its efforts to identify potential preliminary alternative routes for the proposed 345 kV transmission line project in Chapter 4.0 of the Environmental Assessment and Routing Study. After Halff completed the initial data gathering and constraints mapping process, preliminary alternative route links were identified on aerial photography. These preliminary alternative route links were selected considering the location of existing corridors, apparent property boundaries and routing constraints. Numerous preliminary alternative route links were identified by Halff, prior to the public participation meeting, that when combined formed many preliminary alternative routes to connect Oncor's Sand Lake Switch to the AEP Texas Solstice Switch. The preliminary alternative route links evaluated by Halff and presented at the public participation meeting are depicted in Exhibit 1 located in Appendix B of the Environmental Assessment and Routing Study.

Following the public participation meeting, Halff conducted reconnaissance surveys to evaluate and identify in the field the input, comments, and information received at the public participation

meeting, as well as supplement their prior work, to determine whether that information would warrant modifications to the preliminary alternative route links and/or the identification of new preliminary alternative route links that were not presented at the meeting. The preliminary alternative route link revisions are discussed in detail in Chapter 6.0 of the Environmental Assessment and Routing Study and are briefly summarized below.

In general, numerous links were modified to account for new construction identified during the September 2018 aerial reconnaissance, mostly related to oil and gas facilities. Following the preliminary alternative route link revisions, Halff identified a total of 408 alternative routes that were further evaluated, as discussed in Chapter 7.0 of the Environmental Assessment and Routing Study. These routes were presented to Oncor and AEP Texas.

Each of the 408 preliminary alternative routes identified by Halff possesses both positive and negative comparative attributes. Oncor and AEP Texas considered each of these attributes to select a set of geographically diverse routing alternatives to be filed as a part of this Application. Each alternative route complies with Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code and 16 Texas Administrative Code § 25.101, including the Commission's policy of prudent avoidance.

Below, is a discussion of the alternative routes that were selected to be filed with the Application. The routes can be grouped in many different ways; one approach is the grouping of routes into geographic corridors. Alternative routes can be grouped into five different geographic corridors. These five corridors are identified as: the west corridor using Link F1; the west-central corridor using Link F2; the central corridor using Link F3; the east-central corridor using Link H1; and the east corridor using Link H2. Due to the location of this project's endpoints being on opposite sides of the Pecos River, all routes cross the Pecos River.

Oncor and AEP Texas selected 29 geographically diverse alternative routes to be filed with the CCN Application to allow for an adequate number of alternative routes to conduct a proper evaluation. The links that comprise these routes are presented in Table 1. Table 2 presents quantifiable environmental data on the 29 alternative routes filed as a part of the CCN Application.

Oncor and AEP Texas then presented these 29 alternative routes to Mr. Wilson Peppard for consideration of engineering feasibility, construction limitations and alternative route cost estimates. Below is a discussion of each of the five geographic corridors and the alternative routes selected for filing within each corridor.

The west corridor includes routes containing Link F1. The west F1 corridor routes vary in length from approximately 50.4 to 57.9 miles. The west F1 corridor routes range in transmission line costs from $111,077,000 to $123,457,000. The west F1 corridor routes vary in the number of habitable structures within 500 feet of the route centerline from 2 to 66. The west F1 corridor routes vary in the percentage of compatible corridors paralleled from 29.7% to 48.7%. The seven alternatives filed in the Application that are in the west F1 corridor include Routes 46, 49, 325, 326, 328, 329 and 370.

The west-central corridor includes routes containing Link F2. The west-central F2 corridor routes vary in length from approximately 49.7 to 56.3 miles. The west-central F2 corridor routes range in transmission line costs from $111,780,000 to $122,360,000. The west-central F2 corridor routes vary in the number of habitable structures within 500 feet of the route centerline from 2 to 66. The west-central F2 corridor routes vary in the percentage of compatible corridors paralleled from 25.5% to 37.0%. The four alternatives filed in the Application that are in the west-central F2 corridor include Routes 78, 357, 366 and 404.

The central corridor includes routes containing Link F3. The central F3 corridor routes within this corridor vary in length from approximately 44.5 to 53.4 miles. The central F3 corridor routes range in transmission line costs from $98,220,000 to $116,066,000. The central F3 corridor routes vary in the number of habitable structures within 500 feet of the route centerline from 3 to 38. The central F3 corridor routes vary in the percentage of compatible corridors paralleled from 25.4% to 38.0%. The six alternatives filed in the Application that are in the central F3 corridor are Routes 18, 41, 297, 310, 320 and 324.

The east-central corridor includes routes containing Link H1. The east-central H1 corridor routes vary in length from approximately 47.2 to 51.3 miles. The east-central H1 corridor routes range in transmission line costs from $106,217,000 to $113,652,000. The east-central H1 corridor routes vary in the number of habitable structures within 500 feet of the route centerline from 3 to 39. The east-central H1 corridor routes vary in the percentage of compatible corridors paralleled from 21.9% to 36.2%. The six alternatives filed in the Application that are in the east-central H1 corridor are Routes 13, 14, 131, 292, 293 and 296.

The east corridor includes routes containing Link H2. The east H2 corridor routes vary in length from approximately 48.8 to 58.7 miles. The east H2 corridor routes range in transmission line costs from $107,266,000 to $126,903,000. The east H2 corridor routes vary in the number of habitable structures within 500 feet of the route centerline from 2 to 38. The east H2 corridor routes vary in the percentage of compatible corridors paralleled from 17.3% to 32.9%. The six alternatives filed in the Application that are in the east H2 corridor are Routes 3, 90, 183, 280, 281 and 282.

After analyzing each of the 29 alternative routes within the five geographic corridors, Route 320 (Links A-B2-B3-C2-D2-F3-G4-G51-I2-J1-J7-L1-Z) was selected as the route that best meets the requirements of the Texas Utilities Code and the Commission's Substantive Rules.

The other significant factors which led to the selection of Route 320 include the following:

- the length of Route 320 is approximately 44.5 miles, which is the shortest alternative route (Route 183 is the longest route included in the Application at approximately 58.7 miles);
- Route 320 is estimated to cost approximately $98,220,000, which is the least expensive alternative route and is $28,683,000 less than the most expensive alternative route (Route 183);
- there are no habitable structures within the proposed right-of-way of Route 320;
- there are 38 habitable structures within 500 feet of the centerline of Route 320, of which 34 of these 38 structures are mobile living or office units that are temporarily in place and

appear to have no permanent foundations. The 32 mobile living units are of the travel trailer style and are located within 500 feet of Link B2's centerline (habitable structure map identification numbers 2-20 and 22-34). The 2 mobile office units are prefabricated mobile units located within 500 feet of Link Z's centerline at the solar facility near the Solstice Switch endpoint (habitable structure map identification numbers 67 and 68). Habitable structure counts within 500 feet of the filed routes centerlines range from 2 to 66;

- Route 320 parallels existing compatible corridors, including existing transmission lines, public roads and highways, railroads, and apparent property boundaries, for approximately 27.2% of its length (the range of alternative routes paralleling existing compatible corridors is 17.3% to 48.7%);
- Route 320 crosses no parks/recreational areas and does not have any parks/recreational areas within 1,000 feet of its centerline;
- Route 320 crosses no recorded cultural resource sites (two crossings of recorded cultural resource sites was the highest count among the filed routes);
- Route 320 has one recorded cultural resource site within 1,000 feet of its centerline (six recorded cultural resource sites within 1,000 feet of the centerline was the highest count among the filed routes);
- Route 320 has no FAA-registered airport with a runway greater than 3,200 feet within 20,000 feet of the centerline (two FAA-registered airports with a runway greater than 3,200 feet within 20,000 feet of the centerline was the highest count among the filed routes);
- Route 320 has no FAA-registered airport with a runway of 3,200 feet or less within 10,000 feet of the centerline;
- Route 320 has no commercial AM radio transmitters within 10,000 feet of its centerline;
- Route 320 has no FM radio transmitters, microwave relay stations, or other similar electronic installations within 2,000 feet of its centerline (four such electronic installations within 2,000 feet of centerline was the highest count among the filed routes);
- Route 320 crosses three US or State Highways along its entire length (US or State Highway crossings range from 2 to 3 among the filed routes);
- Route 320 crosses thirteen FM roads, county roads or other streets along its entire length (such road or street crossings range from 8 to 19 among the filed routes);
- Route 320 has been judged to be feasible from an engineering perspective based on currently known conditions without the benefit of on-the-ground and subsurface surveys, and there are no currently-identifiable engineering constraints that impact this route that cannot be addressed with additional consideration by Oncor and AEP Texas during the engineering and construction process.

After considering all of the parameters and issues as discussed in this memo, Oncor and AEP Texas selected Route 320 as the route that best meets the requirements of the Texas Utilities Code and the Commission's Substantive Rules.

Additional information concerning the issues addressed in this memorandum can be found in the Environmental Assessment and Routing Study, included as Attachment No. 1 to the CCN Application, as well as my direct testimony filed with the CCN Application.

Route	Link Sequence	Miles
3	A-B1-C3-C2-D2-E2-F4-G6-H2-J22-J3-K4-K5-L1-Z	50.0
13	A-B1-C3-C2-D2-E2-F4-H1-I3-J1-J7-L1-Z	48.4
14	A-B1-C3-C2-D2-E2-F4-H1-I3-J1-J5-J8-K5-L1-Z	51.2
18	A-B1-C3-C2-D2-F3-G2-G3-G51-G52-I3-J1-J7-L1-Z	46.7
41	A-B1-C3-C2-D2-F3-G4-G51-I2-J1-J7-L1-Z	45.7
46	A-B1-C3-C2-D1-E1-F1-I1-K11-K12-L2-Z	54.9
49	A-B1-C3-C2-D1-E1-F1-I1-K2-K3-K12-L2-Z	51.6
78	A-B1-C3-C2-D1-E1-F2-G4-G51-G52-I3-J1-J7-L1-Z	50.8
90	A-B1-C4-D31-E4-D42-F5-H2-J22-J3-K4-K5-L1-Z	52.8
131	A-B1-C4-D31-D32-E3-F4-H1-I3-J1-J7-L1-Z	51.3
183	A-B1-C4-D41-D42-F5-H2-J22-J3-K4-K5-L1-Z	58.7
280	A-B2-B3-C2-D2-E2-F4-G6-H2-J22-J3-J4-J8-K5-L1-Z	50.6
281	A-B2-B3-C2-D2-E2-F4-G6-H2-J22-J3-J4-J5-J7-L1-Z	51.7
282	A-B2-B3-C2-D2-E2-F4-G6-H2-J22-J3-K4-K5-L1-Z	48.8
292	A-B2-B3-C2-D2-E2-F4-H1-I3-J1-J7-L1-Z	47.2
293	A-B2-B3-C2-D2-E2-F4-H1-I3-J1-J5-J8-K5-L1-Z	50.0
296	A-B2-B3-C2-D2-E2-F4-H1-I3-J21-J22-J3-K4-K5-L1-Z	49.9
297	A-B2-B3-C2-D2-F3-G2-G3-G51-G52-I3-J1-J7-L1-Z	45.5
310	A-B2-B3-C2-D2-F3-G2-G1-I1-K2-K3-K12-L2-Z	53.4
320	A-B2-B3-C2-D2-F3-G4-G51-I2-J1-J7-L1-Z	44.5
324	A-B2-B3-C2-D2-F3-G4-G51-I2-J21-J22-J3-K4-K5-L1-Z	47.2
325	A-B2-B3-C2-D1-E1-F1-I1-K11-K12-L2-Z	53.7
326	A-B2-B3-C2-D1-E1-F1-I1-K2-J6-J7-L1-Z	53.3
328	A-B2-B3-C2-D1-E1-F1-I1-K2-K3-K12-L2-Z	50.4
329	A-B2-B3-C2-D1-E1-F1-G1-G3-G51-G52-I3-J1-J7-L1-Z	52.8
357	A-B2-B3-C2-D1-E1-F2-G4-G51-G52-I3-J1-J7-L1-Z	49.7
366	A-B2-B3-C2-D1-E1-F2-G4-G51-I2-J21-J22-J3-K4-K5-L1-Z	51.5
370	A-B2-C1-E1-F1-I1-K2-K3-K12-L2-Z	57.9
404	A-B2-C1-E1-F2-G4-G51-I2-J1-J7-L1-Z	56.3

TABLE 2 ENVIRONMENTAL DATA FOR ROUTES FILED IN THE CCN APPLICATION

Alternative Route Number	3	13	14	18	41	46	49	78	90	131	183
Length of alternative route	263,845	255,339	270,081	246,581	241,329	289,870	272,194	268,346	278,823	270,847	309,935
Length of alternative route (miles)	50 0	48 4	51 2	46 7	45 7	54.9	51 6	50 8	52 8	51 3	58 7
Length of route parallel to existing electric transmission lines	36,604	0	13,724	0	10,149	58,317	59,872	7,925	36,604	4,386	62,772
Length of route parallel to railroads	0	0	0	0	0	0	0	0	0	0	0
Length of route parallel to existing public roads/highways	15,673	16,481	15,673	16,481	16,481	8,038	8,038	16,481	21,077	20,723	26,470
Length of route parallel to pipelines	8,174	8,748	8,748	670	1,244	747	747	13,237	11,667	12,207	6,534
Length of route parallel to apparent property boundaries	24,489	55,190	57,898	53,125	44,559	78,943	53,521	51,080	10,697	41,397	19,841
Total length of route parallel to existing compatible rights-of-way	69,710	64,616	80,239	62,550	64,134	138,241	114,374	68,430	61,322	59,450	102,028
Number of habitable structures within 500 feet of the route centerline[1]	3	4	4	3	3	2	*	2	2	3	2
Number of parks or recreational areas within 1,000 feet of the route centerline[2]	0	0	0	0	0	0	0	0	0	0	0
Length of the route across parks/recreational areas	0	0	0	0	0	0	0	0	0	0	0
Length of route through commercial/industrial areas	14,249	13,699	13,977	11,888	11,337	10,422	10,409	12,038	14,496	13,877	16,364
Length of the route across cropland/hay meadow	1,233	1,233	1,233	1,233	1,233	1,233	1,233	1,233	1,233	1,233	1,233
Length across rangeland pasture	232,330	215,803	235,767	207,862	198,704	237,747	231,348	228,465	242,690	229,067	271,636
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0
Length of route across upland woodlands	0	0	0	0	0	0	0	0	0	0	0
Length of route across riparian areas	14,607	19,658	17,673	19,869	24,327	34,721	26,789	21,094	18,739	22,139	18,374
Length of route across potential wetlands	1,343	4,861	1,347	5,644	5,644	5,528	2,319	5,433	1,595	4,461	2,279
Number of stream crossings by the route	13	18	18	15	14	16	20	13	37	39	32
Length of route parallel to streams (within 100 feet)	0	783	783	1,001	1,001	3,203	3,450	201	1,788	1,897	2,977
Length across lakes or ponds (open waters)	83	83	83	83	83	219	96	83	70	70	49
Number of known rare/unique plant locations within the right-of-way	1	1	1	1	1	4	3	3	0	0	0
Length of route through known habitat of endangered or threatened species	63	63	63	63	63	10,532	10,532	10,532	95	95	50
Number of recorded cultural resource sites crossed by the route	1	0	0	0	0	1	2	1	1	0	1
Number of recorded cultural resources within 1,000 feet of the route centerline	4	2	2	3	3	3	4	3	5	2	6
Length of route across areas of high archaeological/historical site potential	53,146	69,037	71,903	64,131	62,797	72,502	73,191	65,743	90,034	93,158	100,595
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	0	0	0	0	0	1	1	1	0	0	0
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0
Number of heliports located within 5,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave and other electronic installations within 2,000 feet of the route centerline	1	2	2	0	0	1	1	1	0	1	0
Number of U S or State Highway crossings by the route	3	3	3	3	3	3	3	3	3	3	2
Number of Farm to Market (F M), county roads, or other street crossings by the route	9	12	12	13	13	9	8	11	8	9	8
Estimated length of right-of-way within foreground visual zone of U S and State Highways	20,050	21,616	21,616	20,298	20,298	32,979	26,627	23,119	16,896	18,462	14,222
Estimated length of right-of-way within foreground visual zone of park/recreational areas	0	0	0	0	0	0	0	0	0	0	0

Note. All length measurements in feet All linear measurements were obtained from the National Agricultural Imagery Program digital ortho imagery flown in 2016-2017 with the exception of areas of high archaeological/historical site potential which were measured from USGS Topographic Quadrangles The aerial photograph has a provided accuracy of +/- 30 feet

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* - Not included in length of route parallel to existing compatible rights-of-way

TABLE 2 ENVIRONMENTAL DATA FOR ROUTES FILED IN THE CCN APPLICATION

Alternative Route Number	280	281	282	292	293	296	297	310	320	324	325
Length of alternative route	267,199	273,212	257,698	249,191	263,933	263,481	240,433	281,790	235,181	249,471	283,722
Length of alternative route (miles)	50 6	51 7	48 8	47 2	50 0	49 9	45 5	53 4	44 5	47 2	53 7
Length of route parallel to existing electric transmission lines	22,117	8,393	36,604	0	13,724	54,446	0	59,872	10,149	64,596	58,317
Length of route parallel to railroads	0	0	0	0	0	0	0	0	0	0	0
Length of route parallel to existing public roads/highways	20,629	21,438	15,479	16,287	15,479	15,479	16,287	7,326	16,287	15,479	7,844
Length of route parallel to pipelines	8,174	8,174	8,174	8,748	8,748	13,110	670	747	1,244	5,606	747
Length of route parallel to apparent property boundaries	27,004	24,295	24,295	54,996	57,704	32,280	52,931	46,412	44,365	21,649	78,749
Total length of route parallel to existing compatible rights-of-way	62,888	47,264	69,516	64,422	80,045	95,343	62,356	106,748	63,940	94,861	138,047
Number of habitable structures within 500 feet of the route centerline[1]	38	38	38	39	39	39	38	38	38	38	37
Number of parks or recreational areas within 1,000 feet of the route centerline[2]	0	0	0	0	0	0	0	0	0	0	0
Length of the route across parks/recreational areas	0	0	0	0	0	0	0	0	0	0	0
Length of route through commercial/industrial areas	13,504	13,708	13,763	13,213	13,491	13,935	11,402	11,767	10,851	11,573	9,936
Length of the route across cropland/hay meadow	1,233	1,233	1,233	1,233	1,233	1,233	1,233	1,233	1,233	1,233	1,233
Length across rangeland pasture	233,317	232,980	226,196	209,668	229,633	232,844	201,728	236,458	192,570	215,746	231,612
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0
Length of route across upland woodlands	0	0	0	0	0	0	0	0	0	0	0
Length of route across riparian areas	17,684	20,315	15,141	20,193	18,208	14,104	20,404	29,135	24,861	18,772	35,256
Length of route across potential wetlands	1,382	4,896	1,284	4,803	1,289	1,284	5,586	3,106	5,586	2,067	5,470
Number of stream crossings by the route	15	15	15	20	20	19	17	21	16	15	18
Length of route parallel to streams (within 100 feet)	0	0	0	783	783	581	1,001	1,584	1,001	799	3,203
Length across lakes or ponds (open waters)	80	80	80	80	80	80	80	92	80	80	215
Number of known rare/unique plant locations within the right-of-way	1	1	1	1	1	1	1	1	1	1	4
Length of route through known habitat of endangered or threatened species	63	63	63	63	63	63	63	63	63	63	10,532
Number of recorded cultural resource sites crossed by the route	1	1	1	0	0	0	0	1	0	0	1
Number of recorded cultural resources within 1,000 feet of the route centerline	2	2	2	0	0	0	1	2	1	1	1
Length of route across areas of high archaeological/historical site potential	53,412	50,546	53,412	69,303	72,170	68,262	64,397	65,523	63,063	62,021	72,768
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	0	0	0	0	0	0	0	0	0	0	1
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0
Number of heliports located within 5,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave and other electronic installations within 2,000 feet of the route centerline	1	1	1	2	2	4	0	0	0	2	1
Number of U S or State Highway crossings by the route	3	3	3	3	3	3	3	3	3	3	3
Number of Farm to Market (F M), county roads, or other street crossings by the route	9	9	9	12	12	9	13	10	13	10	9
Estimated length of right-of-way within foreground visual zone of U S and State Highways	20,050	20,050	20,050	21,616	21,616	21,616	20,298	23,806	20,298	20,298	32,979
Estimated length of right-of-way within foreground visual zone of park/recreational areas	0	0	0	0	0	0	0	0	0	0	0

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* - Not included in length of route parallel to existing compatible rights-of-way

TABLE 2 ENVIRONMENTAL DATA FOR ROUTES FILED IN THE CCN APPLICATION

Alternative Route Number	326	328	329	357	366	370	404
Length of alternative route	281,677	266,046	278,897	262,198	272,139	305,532	297,334
Length of alternative route (miles)	53 3	50 4	52 8	49 7	51.5	57 9	56 3
Length of route parallel to existing electric transmission lines	23,841	59,872	0	7,925	72,520	59,872	18,074
Length of route parallel to railroads	0	0	0	0	0	0	0
Length of route parallel to existing public roads/highways	16,805	7,844	16,805	16,287	15,479	21,892	30,336
Length of route parallel to pipelines	747	747	670	13,237	18,173	3,460	16,524
Length of route parallel to apparent property boundaries	53,327	53,327	72,985	50,886	19,604	73,073	62,066
Total length of route parallel to existing compatible rights-of-way	87,111	114,180	82,928	68,236	100,741	135,522	91,161
Number of habitable structures within 500 feet of the route centerline[1]	37	37	37	37	37	66	66
Number of parks or recreational areas within 1,000 feet of the route centerline[2]	0	0	0	0	0	0	0
Length of the route across parks/recreational areas	0	0	0	0	0	0	0
Length of route through commercial/industrial areas	10,313	9,923	11,791	11,552	11,975	8,577	9,907
Length of the route across cropland/hay meadow	1,233	1,233	1,233	1,233	1,233	7,177	7,177
Length across rangeland pasture	236,777	225,214	238,868	222,330	237,223	258,816	247,649
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	3,043	3,043
Length of route across upland woodlands	0	0	0	0	0	0	0
Length of route across riparian areas	27,508	27,324	22,183	21,629	19,771	24,584	23,121
Length of route across potential wetlands	5,766	2,261	4,741	5,375	1,856	3,253	6,367
Number of stream crossings by the route	18	22	18	15	13	26	18
Length of route parallel to streams (within 100 feet)	3,125	3,450	2,866	201	0	4,449	1,201
Length across lakes or ponds (open waters)	80	92	80	80	80	83	70
Number of known rare/unique plant locations within the right-of-way	3	3	3	3	3	1	1
Length of route through known habitat of endangered or threatened species	10,532	10,532	10,532	10,532	10,532	52	52
Number of recorded cultural resource sites crossed by the route	1	2	1	1	1	1	0
Number of recorded cultural resources within 1,000 feet of the route centerline	1	2	1	1	1	1	0
Length of route across areas of high archaeological/historical site potential	64,957	73,458	72,332	66,009	63,633	49,928	41,145
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	1	1	1	1	1	2	2
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	0	0	0	0	0	0	0
Number of heliports located within 5,000 feet of the route centerline	0	0	0	0	0	0	0
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	1	1
Number of FM, microwave and other electronic installations within 2,000 feet of the route centerline	1	1	1	1	3	0	0
Number of U S or State Highway crossings by the route	3	3	3	3	3	3	3
Number of Farm to Market (F M), county roads, or other street crossings by the route	8	8	11	11	8	16	19
Estimated length of right-of-way within foreground visual zone of U S and State Highways	23,119	26,627	23,119	23,119	23,119	28,636	25,128
Estimated length of right-of-way within foreground visual zone of park/recreational areas	0	0	0	0	0	0	0

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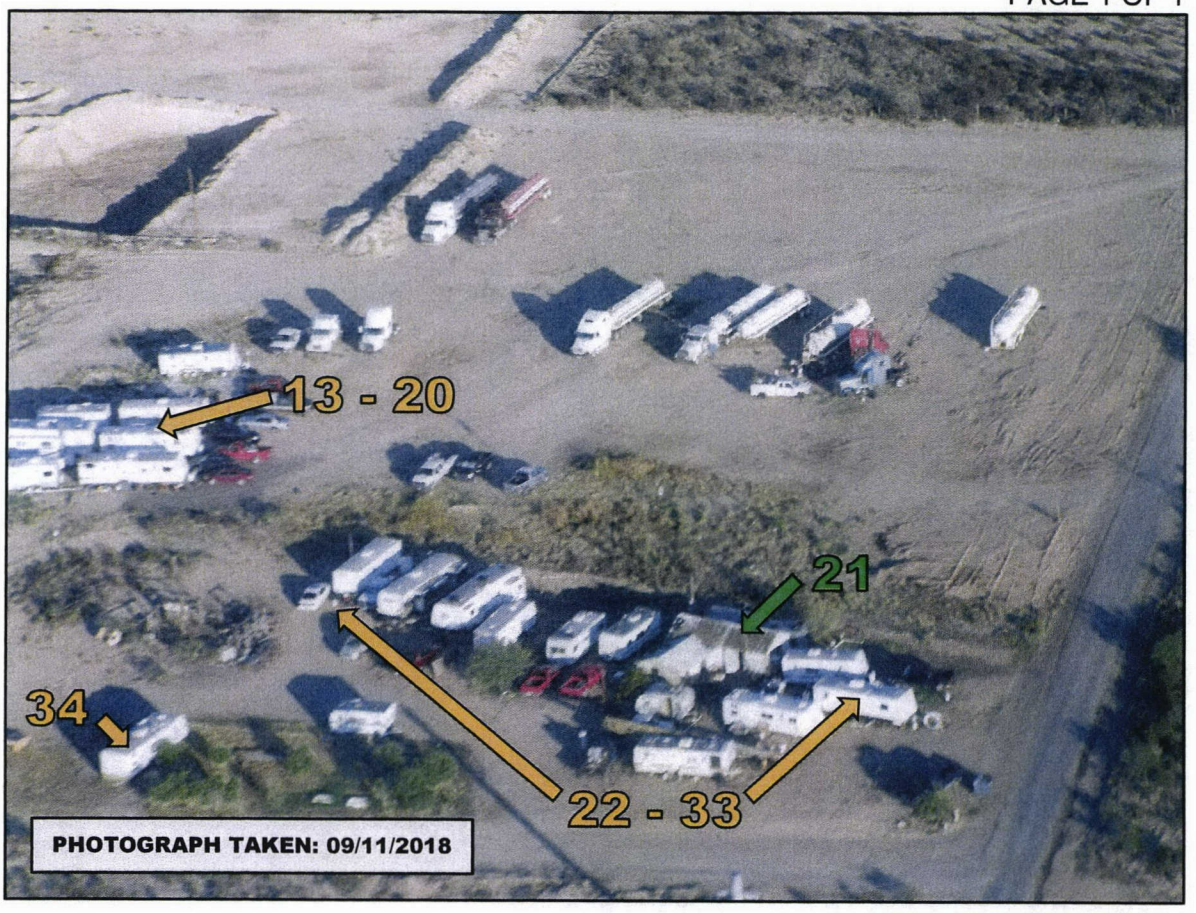
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21
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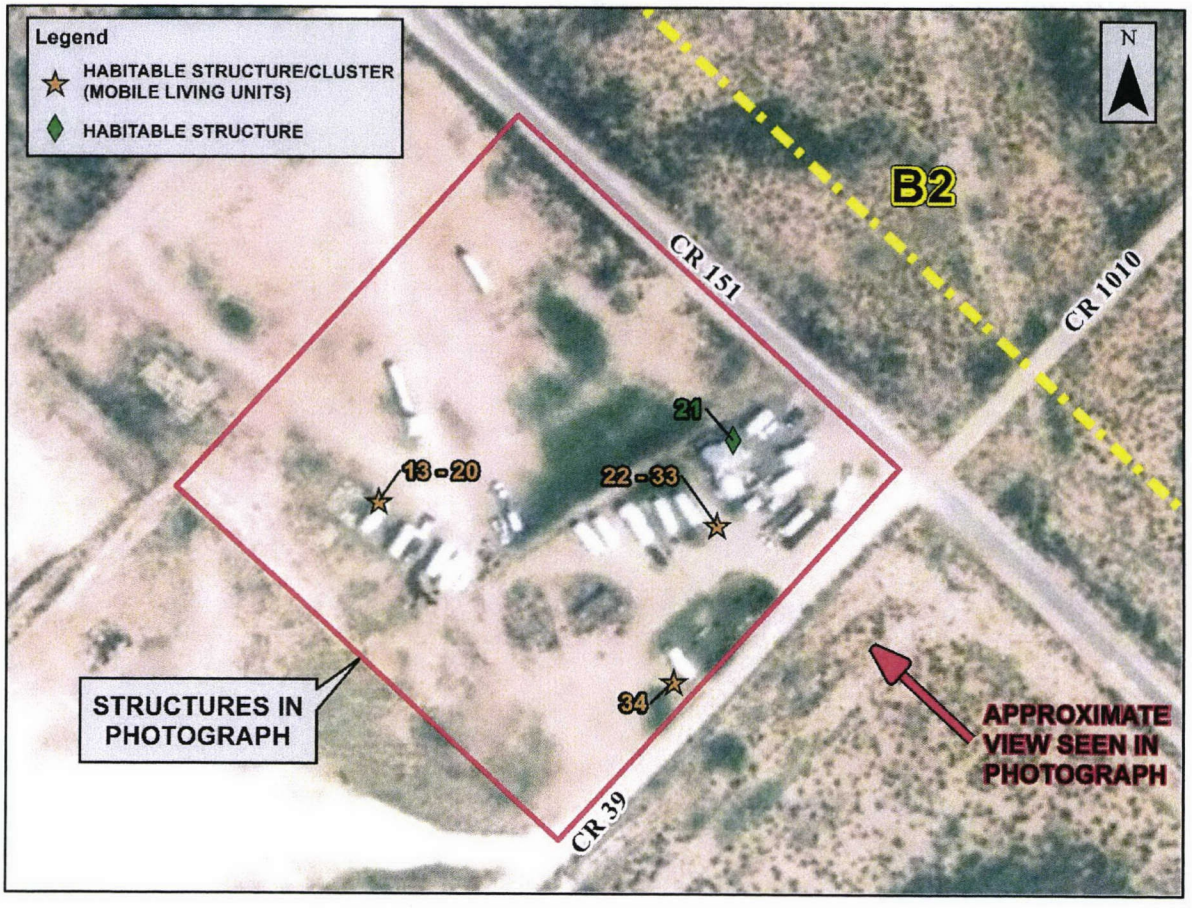
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HABITABLE STRUCTURE/CLUSTER (MOBILE LIVING UNITS)
HABITABLE STRUCTURE
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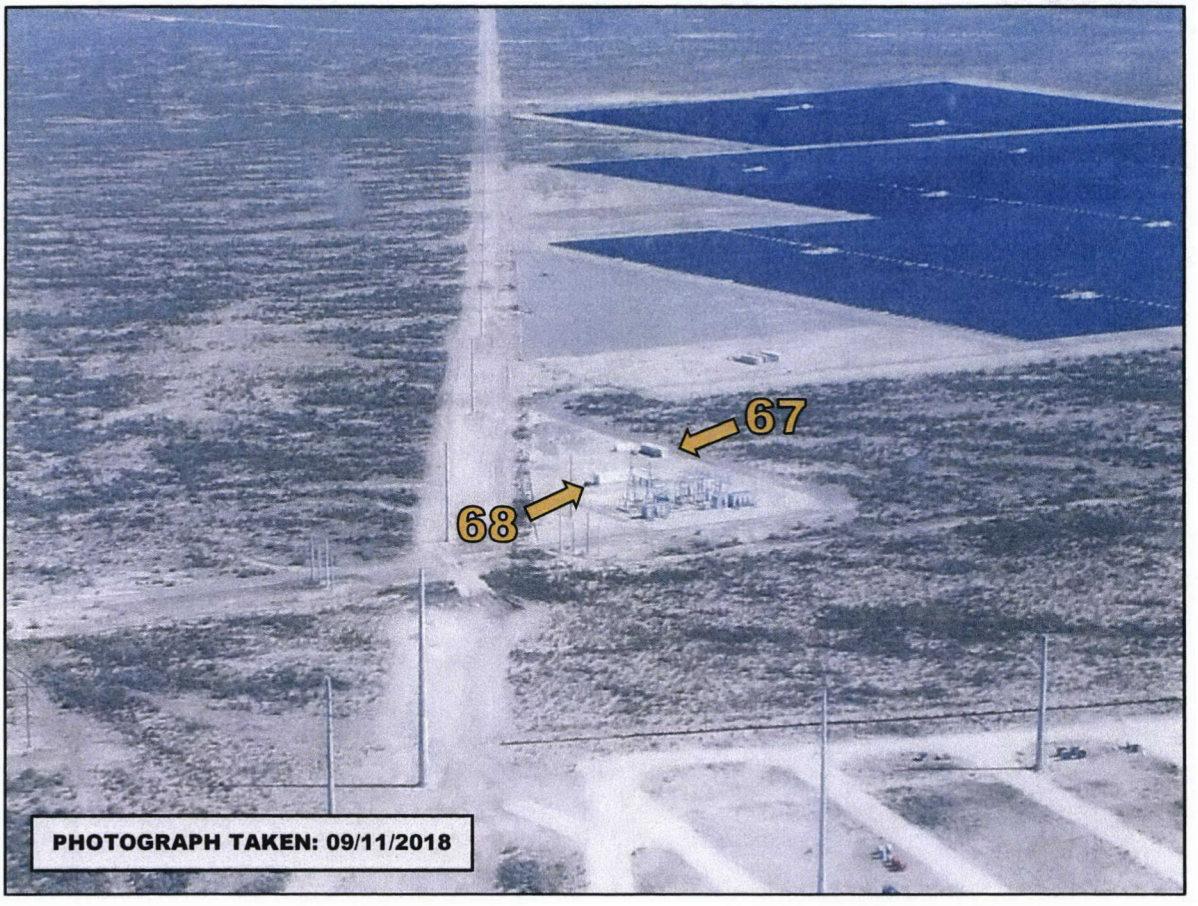
CR 151
CR 1010
21
13 - 20
22 - 33
34
STRUCTURES IN PHOTOGRAPH
APPROXIMATE VIEW SEEN IN PHOTOGRAPH
CR 39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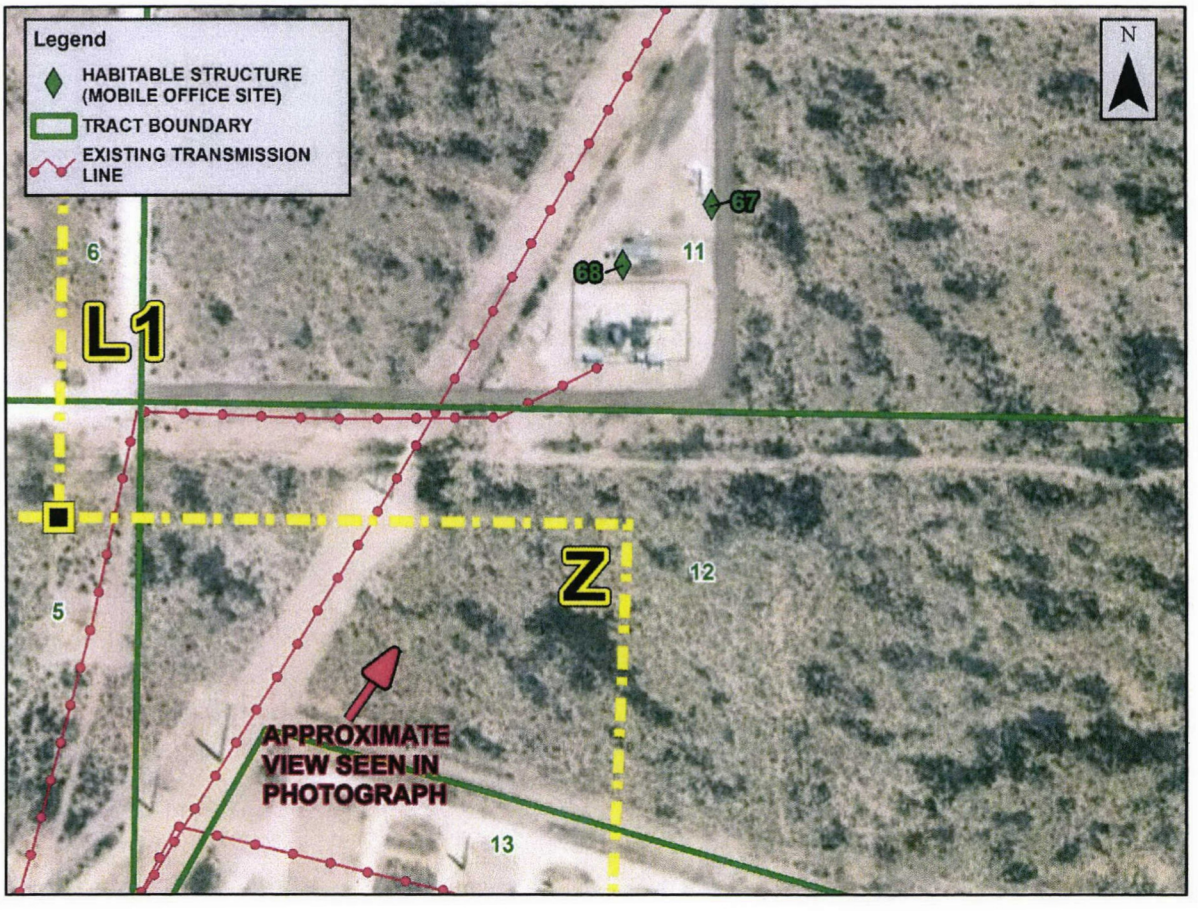
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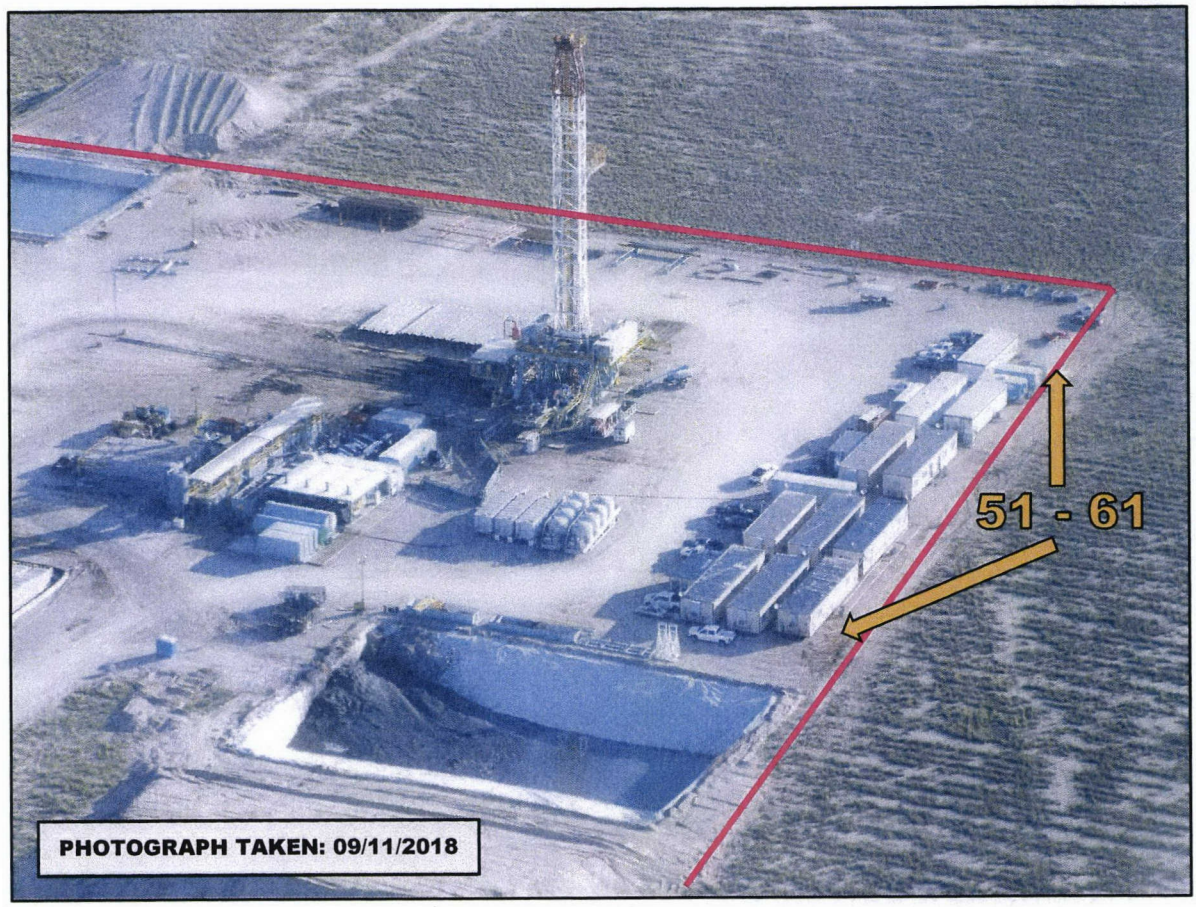
HABITABLE STRUCTURE (MOBILE OFFICE SITE)
TRACT BOUNDARY
EXISTING TRANSMISSION LINE
N
67
68
11
6
L1
Z
12
5
APPROXIMATE VIEW SEEN IN PHOTOGRAPH
13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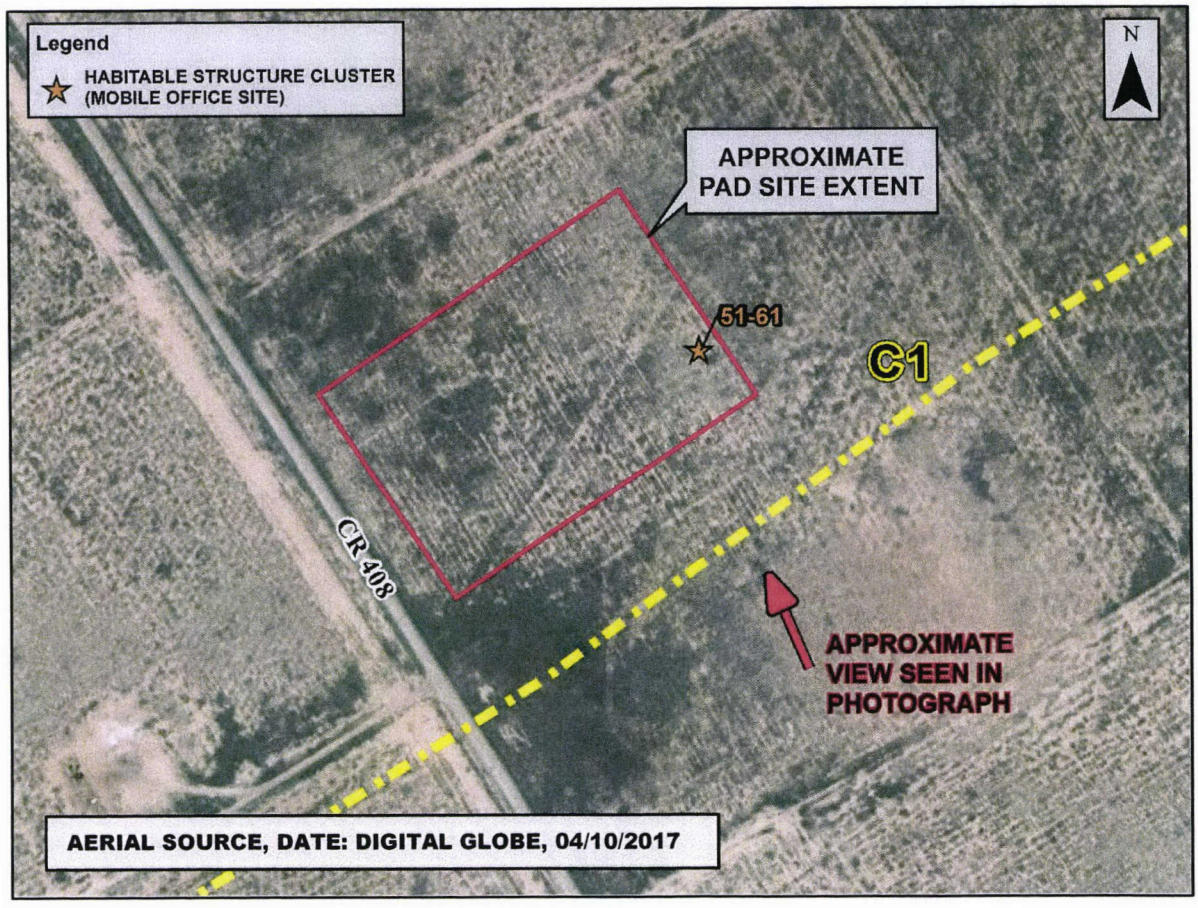
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APPROXIMATE PAD SITE EXTENT
51-61
C1
CR 408
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AERIAL SOURCE, DATE: DIGITAL GLOBE, 04/10/2017